Developing Knowledge and Skills in Computing

Our school uses the Purple Mash Scheme to help us deliver the essential knowledge and skills of the National Curriculum. This document aims to support staff in understanding the progression and essential knowledge in developing children's schemata.

Our curriculum priorities the following areas of computing:

Predominant Area of Computing*					
🟥	Computer Science	🟦	Information Technology	🟨	Digital Literacy

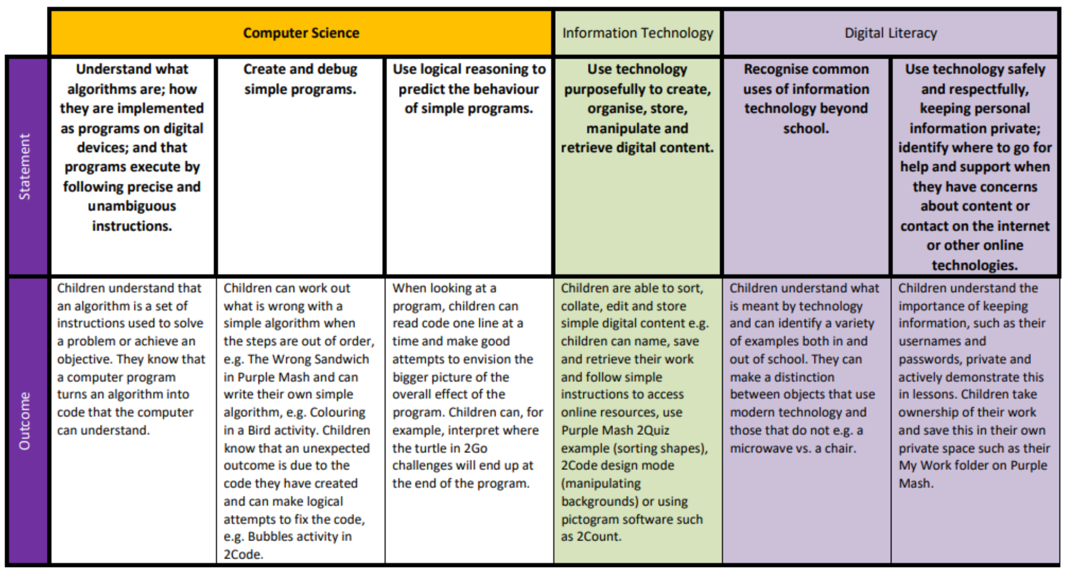
*Most units will include aspects of all strands.

We define these categories of knowledge in the following ways:

Computer Science	Information Technology	Digital Literacy
Algorithms and programming: fundamentals and language to solve problems; logical reasoning-predicting and comparing; decomposition (breaking it down to small parts); pattern recognition; abstraction (important information) **Systems:** hardware and networks (the architectures) **Data:** how data is represented, grouped, ordered or flows through the system	**Digital Artefacts** e.g. sound, video, pictures – anything that can be digitally created (powerpoint; video) **Searching for and selecting information:** effective searching sorting; filtering; reliability **Mechanics:** how to use devices efficiently e.g. keyboard, mouse, efficient methods and practice	**How to use in an effective, informed and safe way** **Online Safety** **Computing Contexts** (how used, where used and in different ways)

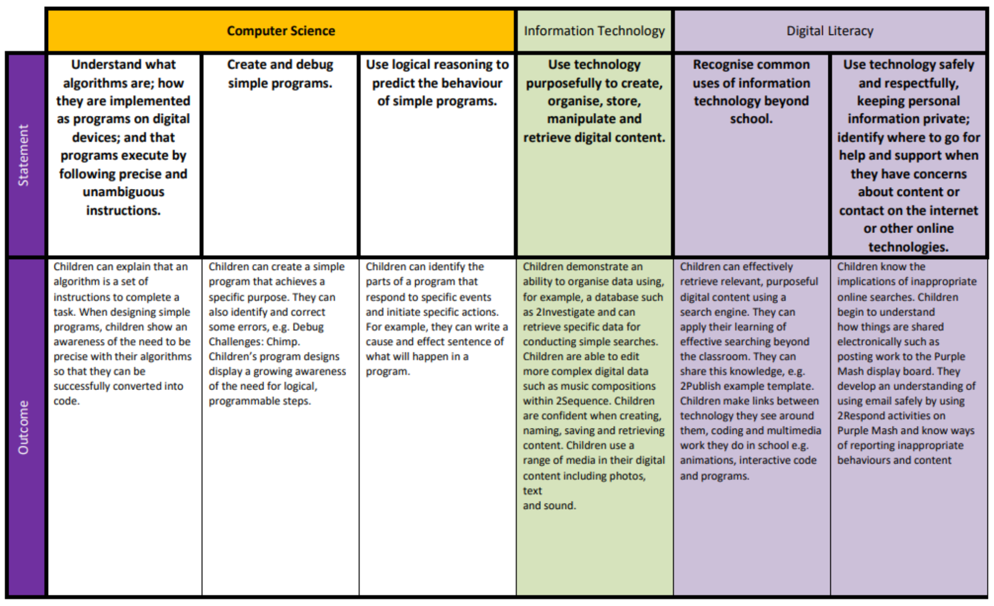
Below shows the progression using the NC Statements and Outcomes for each year group.

Y1 Teacher Progression Overview: N.C. Statements & skills and knowledge



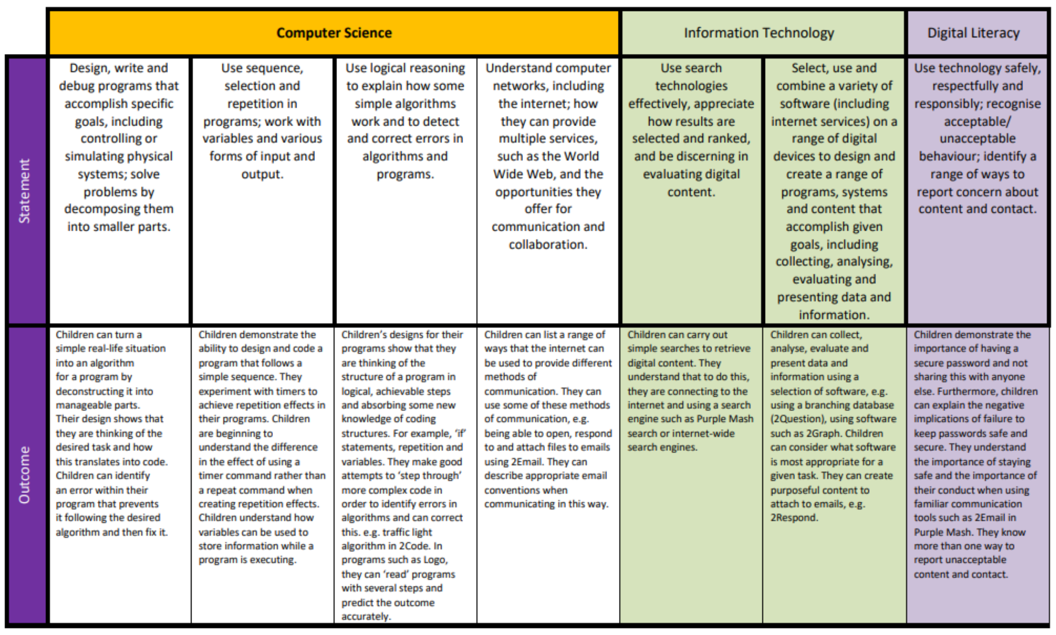
	Computer Science			Information Technology	Digital Literacy	
Statement	**Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.**	**Create and debug simple programs.**	**Use logical reasoning to predict the behaviour of simple programs.**	**Use technology purposefully to create, organise, store, manipulate and retrieve digital content.**	**Recognise common uses of information technology beyond school.**	**Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.**
Outcome	Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective. They know that a computer program turns an algorithm into code that the computer can understand.	Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g. Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code.	When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program.	Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.	Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair.	Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.

Y2 Teacher Progression Overview: N.C. Statements & skills and knowledge



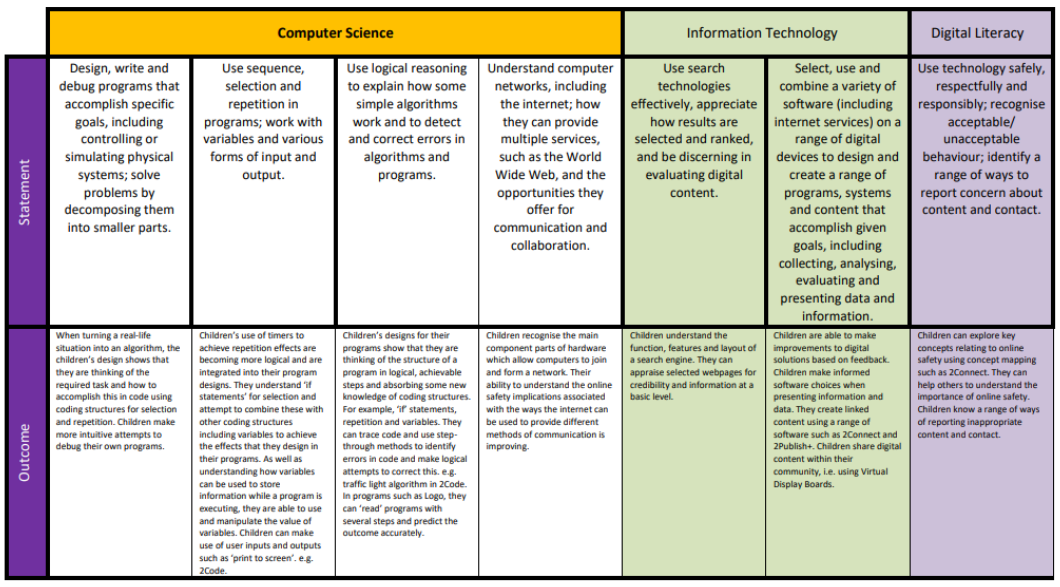
	Computer Science			Information Technology	Digital Literacy	
Statement	**Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.**	**Create and debug simple programs.**	**Use logical reasoning to predict the behaviour of simple programs.**	**Use technology purposefully to create, organise, store, manipulate and retrieve digital content.**	**Recognise common uses of information technology beyond school.**	**Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.**
Outcome	Children can explain that an algorithm is a set of instructions to complete a task. When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code.	Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors, e.g. Debug Challenges: Chimp. Children's program designs display a growing awareness of the need for logical, programmable steps.	Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program.	Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches. Children are able to edit more complex digital data such as music compositions within 2Sequence. Children are confident when creating, naming, saving and retrieving content. Children use a range of media in their digital content including photos, text and sound.	Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g. 2Publish example template. Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.	Children know the implications of inappropriate online searches. Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board. They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know ways of reporting inappropriate behaviours and content

Y3 Teacher Progression Overview: N.C. Statements & skills and Knowledge



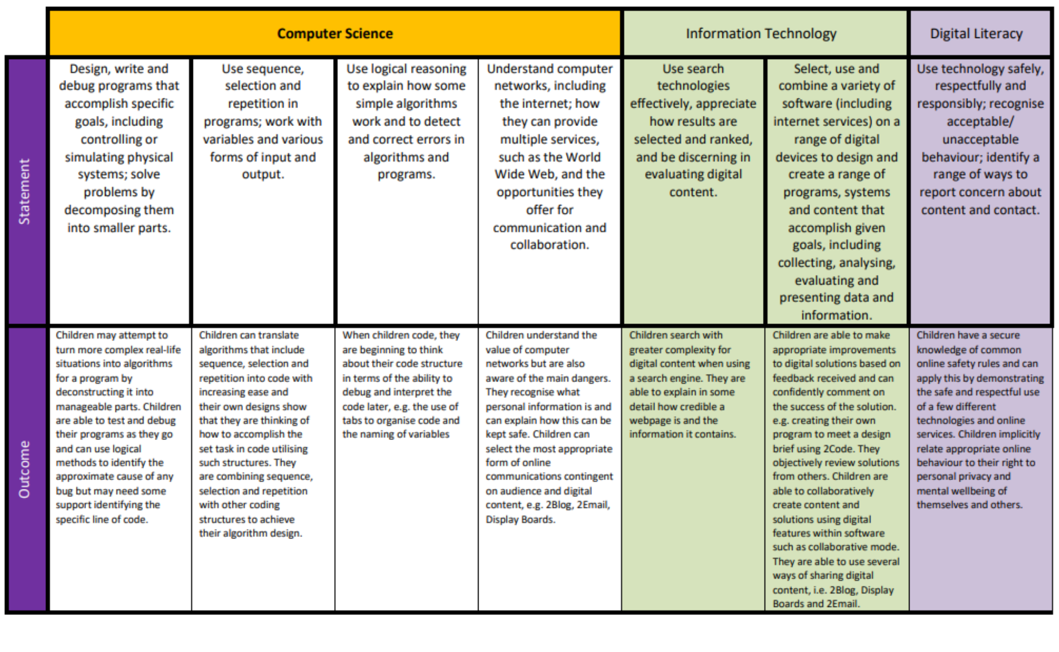
	Computer Science				Information Technology		Digital Literacy
Statement	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code. Children can identify an error within their program that prevents it following the desired algorithm and then fix it.	Children demonstrate the ability to design and code a program that follows a simple sequence. They experiment with timers to achieve repetition effects in their programs. Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects. Children understand how variables can be used to store information while a program is executing.	Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They make good attempts to 'step through' more complex code in order to identify errors in algorithms and can correct this. e.g. traffic light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.	Children can list a range of ways that the internet can be used to provide different methods of communication. They can use some of these methods of communication, e.g. being able to open, respond to and attach files to emails using 2Email. They can describe appropriate email conventions when communicating in this way.	Children can carry out simple searches to retrieve digital content. They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines.	Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using a branching database (2Question), using software such as 2Graph. Children can consider what software is most appropriate for a given task. They can create purposeful content to attach to emails, e.g. 2Respond.	Children demonstrate the importance of having a secure password and not sharing this with anyone else. Furthermore, children can explain the negative implications of failure to keep passwords safe and secure. They understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash. They know more than one way to report unacceptable content and contact.

Y4 Teacher Progression Overview: N.C. Statements & skills and knowledge



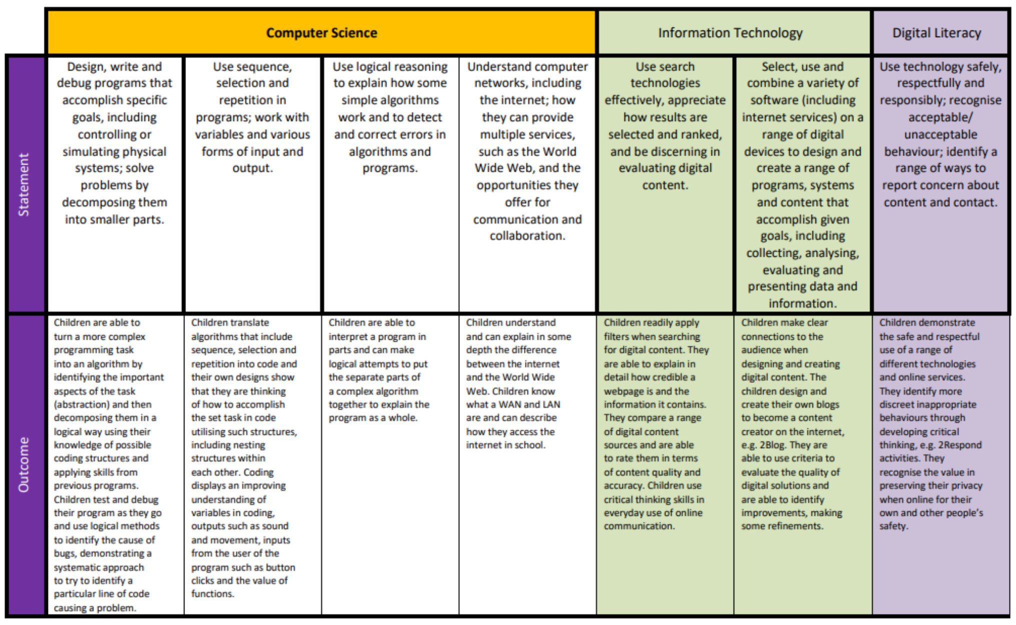
	Computer Science				Information Technology		Digital Literacy
Statement	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	When turning a real-life situation into an algorithm, the children's design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. Children make more intuitive attempts to debug their own programs.	Children's use of timers to achieve repetition effects are becoming more logical and are integrated into their program designs. They understand 'if statements' for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs. As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables. Children can make use of user inputs and outputs such as 'print to screen'. e.g. 2Code.	Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, 'if' statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. e.g. traffic light algorithm in 2Code. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.	Children recognise the main component parts of hardware which allow computers to join and form a network. Their ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.	Children understand the function, features and layout of a search engine. They can appraise selected webpages for credibility and information at a basic level.	Children are able to make improvements to digital solutions based on feedback. Children make informed software choices when presenting information and data. They create linked content using a range of software such as 2Connect and 2Publish+. Children share digital content within their community, i.e. using Virtual Display Boards.	Children can explore key concepts relating to online safety using concept mapping such as 2Connect. They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact.

Y5 Teacher Progression Overview: N.C. Statements & skills and knowledge



	Computer Science				Information Technology		Digital Literacy
Statement	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts. Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code.	Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.	When children code, they are beginning to think about their code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables	Children understand the value of computer networks but are also aware of the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards.	Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains.	Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the success of the solution. e.g. creating their own program to meet a design brief using 2Code. They objectively review solutions from others. Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode. They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.	Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services. Children implicitly relate appropriate online behaviour to their right to personal privacy and mental wellbeing of themselves and others.

Y6 Teacher Progression Overview: N.C. Statements & skills and knowledge



	Computer Science				Information Technology		Digital Literacy
Statement	Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.	Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Understand computer networks, including the internet; how they can provide multiple services, such as the World Wide Web, and the opportunities they offer for communication and collaboration.	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.
Outcome	Children are able to turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs. Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem.	Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other. Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions.	Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole.	Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.	Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains. They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy. Children use critical thinking skills in everyday use of online communication.	Children make clear connections to the audience when designing and creating digital content. The children design and create their own blogs to become a content creator on the internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.	Children demonstrate the safe and respectful use of a range of different technologies and online services. They identify more discreet inappropriate behaviours through developing critical thinking, e.g. 2Respond activities. They recognise the value in preserving their privacy when online for their own and other people's safety.

Units of work are delivered as follows in our school (two year curriculum with mixed age classes):

Class Cycle	Autumn Term		Spring Term		Summer Term	
Reception	Using a camera to take photographs - portraits Using the ipads to take photograph – in provision Logging onto purple mash (avatar creation) Using mini mash – using the mouse pad – click and drag	Mini mash to support our learning Using the computer to draw pictures (Autumn Tree) Click and hold to colour Using To do's	Technology in our role play – how people that help us use technology Using the computer to draw pictures (Winter Tree) Continue mini mash and 2dos	Programming toys – programmable toys (beebots) and codeapillar Using the computer to draw pictures (Spring Tree) Continue mini mash and 2dos	Logging onto computers independently and beginning to use the keyboard for 1 word captions (knowledge of capitals applied) Continue mini mash and 2dos	Continue mini mash and 2dos Using the computer to draw pictures (Summer Tree) Identifying electrical devices Targeting any key areas ready for Y1.
Y1/2 Year A	Unit 1.1 Online Safety & Exploring Purple Mash Number of lessons – 4 Unit 2.5 Effective Searching Number of lessons – 3 Unit 1.9 Technology outside school Number of lessons – 2 Unit 1.4 Lego Builders Number of lessons – 3 Unit 1.2 Grouping & Sorting Number of lessons – 2		Unit 2.6 Creating Pictures Number of lessons – 5 Unit 1.8 Spreadsheets Number of lessons – 3		Unit 1.7 Coding Number of lessons – 6 Unit 2.1 Coding Number of lessons – 5	
Y1/2 Year B	Unit 1.1 Recap Online Safety & Exploring Purple Mash Number of lessons – 4 Unit 1.5 Maze Explorers Number of lessons – 3 Unit 2.4 Questioning Number of lessons – 5		Unit 2.2 Online Safety Number of lessons – 3 Unit 1.6 Animated Story Books Number of lessons – 5 Unit 2.7 Making Music Number of lessons – 3		Unit 1.3 Pictograms Number of lessons – 3 Unit 2.3 Spreadsheets Number of lessons – 4 2.8 Presenting Ideas Number of lessons – 4 (revisit with coding challenge 1.7/2.1)	
Y3/4 Year A	Unit 3.2 Online safety Number of lessons – 3 Unit 3.1 Coding Number of lessons – 6 (3.1.1 flowcharts; 3.1.2 timers; 4.1.2 'if' statements; 4.1.3 c0-ordinates; 3.1;4 code, test, debug ; 4.1.1 design, code, test, debug) Unit 3.3 Spreadsheets Number of lessons – 3		Unit 3.4 Touch Typing Number of lessons – 4 Unit 3.5 Email (including email safety) Number of lessons – 6		Unit 3.6 Branching Databases Number of lessons – 4 Unit 3.7 Simulations Number of lessons – 3 Unit 3.8 Graphing Number of lessons – 2	
Y3/4 Year B	Unit 4.1 Coding Number of lessons – 6 (3.1.3 repeat; 4.1.4 repeat until + if/else statements; 4.1.5 number variables; 3.1.5&6 design and make an interactive scene; 4.1.6 making a playable game) Unit 4.2 Online safety Number of lessons – 4 (revisit 3.1) Presentation for the topic – consider 3.9		Unit 4.5 Logo Number of lessons – 4 Unit 4.6 Animation Number of lessons – 3 Unit 4.7 Effective Search Number of lessons – 3 Unit 4.8 Hardware Investigators Number of lessons – 2		Unit 4.3 Spreadsheets Number of lessons – 6 Unit 4.4 Writing for different audiences Number of lessons – 5	
Y5/6 Year A	Coding 5.1 Cycle A: Number of lessons – 6 (5.1.1 coding efficiently; 5.1.2 simulating a physical system; 5.1.4 Friction and functions; 5.1.5 introducing strings; 5.1.6 text variable and concatenation; 6.1.5 User Input) Unit 5.2 Online safety Number of lessons – 3 Unit 5.3 Spreadsheets Number of lessons – 6 (into spring term)		Unit 5.4 Databases Number of lessons – 4 Multimedia presentations (unit 5.8) Number of lessons – up to 8		Unit 5.6 3D Modelling Number of lessons – 4 Unit 5.7 Concept Maps Number of lessons – 4 Unit 5.5 Game Creator Number of lessons – 5	
Y5/6 Year B	Coding 6.1 Cycle B: Number of lessons – 6 (6.1.1&2 designing ad writing a more complex program; 5.1.3 decomposition and abstraction; 6.1.3 using functions; 6.1.4 flowcharts and control simulations; 6.1.6 text adventure) Unit 6.2 Online safety Number of lessons – 2 Unit 6.4 Blogging Number of lessons – 4		Unit 6.3 Spreadsheets Number of lessons – 5 (6.9 extension) Unit 6.8 Understanding Binary Number of Lessons – 4		Unit 6.5 Text Adventures Number of lessons – 5 Unit 6.6 Networks Number of lessons – 3 Unit 6.7 Quizzing Number of lessons – 6	

The Essential Knowledge in Each Unit/Biannual Cycle is as Follows:

Units revisit knowledge and skills (spiral and interleaved). As teachers use the scheme to deliver the essential knowledge they should professionally adapt materials as result of knowing where children are and the essential knowledge expectations over the two years. **Purple Mash's Prior and Future Learning Links Resources are very clear about what units build on and lead to. Information below is organised in the predominant area of computing but most units have aspects that are important in other strands.** Teachers will build evidence (in Purple Mash) against essential knowledge and skills in order to inform a judgement on the overall statement and outcome.

	Computer Science	Information Technology	Digital Literacy
EYFS	To understand technology needs to be programmed and relate this to giving clear instructions for everyday tasks e.g. simple instructions, timed repetition; task to count of 10 To be able to use a range of technologies e.g. laptop, programmes in purple mash, codepillars, ipads, sound tins, cameras, other programmable toys	To use technology in their role play e.g. phones, computers, shop tills/scanners, printers/photocopiers To type name and one word captions To be familiar with keyboard (lower case – capitals – numbers – space bar – full stop – back space – delete). To develop mouse skills e.g. click to select, drag & drop	To be able to log onto the computer and purple mash with a simple username and password. To begin to have a basic understanding of why they have this. To know why they have a digital picture (avatar) of themselves.
Rea (Year 1 and 2)	**Unit 1.2 – Grouping & Sorting** • Knows how to sort items using a range of criteria. • Knows how to use software for grouping items such as tools within Purple Mash. **Unit 1.4 – Lego Builders** • Knows how to compare the effects of adhering strictly to instructions when completing tasks without complete instructions. • Knows how to follow and create simple instructions on the computer. • Knows that the order of instructions affects the end result for a given instructional task. **Unit 1.5 – Maze Explorers** • Knows the functionality of the direction keys in 2GO. • Knows how to create and debug a set of simple instructions (algorithm). • Knows how to use the additional direction keys within 2Go as part of an algorithm. • Knows how to change and extend the algorithm list in 2Go. **Unit 1.7 – Coding** • Knows what instructions are and can predict what might happen when they are followed. • Knows how to plan and make a simple computer program e.g. fish moves right, crab moves up. • Knows what objects, actions and backgrounds are within a coding environment. • Knows what an event is and knows how to use an event to control an object. • Beginning to know how code executes when a program is run. **Unit 2.1 – Coding** • Knows what an algorithm is and can explain that it is a set of instructions and that algorithms follow a sequence. • Knows how to create a computer program using an algorithm. • Knows how to create a computer program from a given design. • Knows that collision detection is an event type in coding. • Knows how to design an algorithm that follows a timed sequence. • Knows that different objects within the coding environment have different properties. • Knows that there are different events in coding and knows what some of these events are. • Knows the function of buttons in the coding environment. • Knows how to interpret and debug simple programs.	**Unit 1.3 - Pictograms** • Knows that data can be represented in a picture format e.g. pictogram. • Knows how to contribute to a class pictogram. • Knows how to use a software such as 2Count to record results of an experiment into a pictogram format **Unit 1.8 – Spreadsheets** • Knows what a spreadsheet program environment looks like including cells, rows and columns. • Knows basically what a spreadsheet program can help do. • Knows how to enter data into spreadsheet cells. • Knows how to add images to cells. • Knows how to use some tools within spreadsheets e.g. with 2Calulate can use lock cell, move cell, speak and count. **Unit 2.3 – Spreadsheets** • Secures knowledge from prior year when spreadsheets were introduced (See unit 1.8). • Knows how to use prior learning to perform composite task of creating a counting machine using software such as 2Calculate (image, lock move cell, speak and count tools). • Knows how to copy, cut and paste in spreadsheet software such as 2Calculate. • Knows what totalling tools are and how to use them. • Knows how to use a spreadsheet to perform calculations for purpose. For example, adding and totalling money. • Knows how to use some tools within a spreadsheet to support calculations. For example, using the equals tool in 2Calculate to check calculations. • Knows how to create a manual block graph within a spreadsheet from data. **Unit 2.4 – Questioning** • Knows that pictograms provide limited information. • Knows that there are other data handling tools that can give more information than pictograms. • Knows how to use yes/no questions to separate information. • Knows how to construct a binary tree to identify items. • Knows how to use a binary tree database (such as 2Question), to answer questions. • Knows how to use a database to answer more complex search questions. • Knows how to use a search feature at a basic level when trying to locate data within a database such as 2Investigate. **Unit 1.6 – Animated Story Books** • Knows what e-books are. • Knows of software such as 2Create a Story that allows users to create interactive stories. • Knows how to add animation to an interactive story. • Knows how to add sound, including voice recordings and music to a story they have created using software. • Builds confidence in typing sentences – capital letters, spaces, full stops. • Beginning to know how to work on more complex digital stories, including adding backgrounds, copying and pasted pages. • Knows how to share digital stories with others such as using Digital Display Boards. **Unit 2.6 – Creating Pictures** • Knows the purpose and benefits of painting software tools such as 2Paint a Picture. • Knows how to recreate Impressionism, surrealism and Pointillism using features within 2Paint a Picture. • Knows how to reproduce the style of William Morris by using repeating patterns, manipulating patterns and adding multiple effects in painting software such as 2Paint a picture. **Unit 2.7 – Making Music** • Knows how to make forms of music (digitally) using age-appropriate software such as 2Sequence. • Knows how to edit and combine sounds using 2Sequence. • Knows how to refine composed music. • Knows how to upload/import and record sounds beyond the software environment. **Unit 2.8 – Presenting Ideas** • Know that digital content can be presented in many different forms e.g. stories. • Know how to use presentational or interactive software such as a quiz, making improvements to it based on people feedback. • Know that data can be structured in tables to make it useful for an audience. • Know how to add images such as clipart and photos to presentational software. • Know how to collect, organise and present data and information in digital format. • Types sentences with confidence and uses the enter for a new line.	**Unit 1.1 – Online Safety** • Knows how to log in safely. • Knows how to navigate to a document area where saved work by child can be found. • Knows how to use search to locate applications or resources on a platform such as Purple Mash. • Knows how to enhance work by adding multimodal items such as text and images. • Knows how to open, save and print work. • Knows the importance of logging out of an account. **Unit 2.2 – Online Safety** • Knows searches can be refined when searching digitally and therefore attempts refining when searching. • Knows that digitally created work can be shared with others e.g. Purple Mash Display Boards. • Has knowledge and understanding about sharing more globally on the Internet. • Knows that email is a type of communication tool. • Knows how to open and send simple online communications in the form of email e.g. 2Email (virtual email client). • Knows that there is an appropriate way to communicate with others in an online situation. • Knows that information put online leaves a digital footprint. • Knows some steps that can be taken to keep personal data and hardware secure. **Unit 2.5 – Effective Searching** • Knows the meaning of key Internet and searching terms. • Knows the basic parts of a web search engine page. • Knows how to navigate a web search results page. • Knows how to search the Internet to some degree for answers to a quiz. • Knows the premise of what effective Internet searching is. **Unit 1.9 – Tech Outside School** • Knows that technology is a use of knowledge to invent new devices or tools. • Knows that throughout history, technology has made people's lives easier. • Knows that technology is used within school and outside of school. • Knows where examples of technology can be found both in and out of school.

	Computer Science	Information Technology	Digital Literacy
Corve	**Unit 3.1 – Coding** • Knows what a flowchart is and how flowcharts are used in computer programming. • Knows how to use a flowchart to create a computer program. • Knows that there are different types of timers used in coding environments such as 2Code. • Knows which timer should be used for a given purpose. • Know what a repeat command is and how to use the repeat command. • Know how to create a range of programs using coding knowledge. • Know how to run, test and debug their own programs. • Know what nesting is and that this should be considered when debugging. • Know how to change attributes/properties of any objects in a program they have made. **Unit 4.1 – Coding** • Begin to know what selection is in computer programming. • Know how an IF statement works. • Know how to interpret an IF statement and therefore know how to create a program that includes an IF statement. • Know how to use co-ordinates in computer programming. • Know what the 'repeat until' command is. • Know how an IF/ELSE statement works. • Know what a variable is in programming. • Know how to use variables within their programs. • To know how to create a playable game using a block coding environment. **Unit 4.5 – Logo** • Know the structure of the coding language of Logo. • Know how to input simple instructions in Logo language environment. • Know how to create letter shapes using Logo. • Know what the repeat function in Logo is and its usefulness. Use it to create shapes such as squares. • Know what procedures are and use this knowledge to build procedures in Logo. **Unit 4.8 – Hardware Investigators** • Know there are key parts that make up a computer. • Know what each of the key parts is called and the function of them	**Unit 3.3 – Spreadsheets** • Know how to create tables of data within a spreadsheet. • Know how to use a spreadsheet program to automatically create charts and graphs from data. • Know how to use various features within a spreadsheet to support solutions to calculations. For example, 'more than', 'less than', and 'equals'. • Know how to describe a cell location in a spreadsheet. • Know how to find specified locations in a spreadsheet. **Unit 3.6 – Branching Databases** • Know how to sort objects using just YES/NO. • Know how YES/NO questions are structured and answered. • Know how to complete a branching database. • Know how to edit and adapt a branching database. • Know how to create a branching database including debugging it. **Unit 3.8 – Graphing** • Know how to set up a graph with a given number of fields using graphing software (2Graph). • Know how to enter data for a graph. • Know how to select the most appropriate chart type for their data and explain reasoning. • Know how to sort data in graphing software to enable easier analysis. **Unit 4.3 – Spreadsheets** • Know what cell formatting is. • Know how to format cells as currency, percentage, decimal or fraction. • Know how to use formula wizard tools. • Know how to combine spreadsheet tools to create a purposeful spreadsheet e.g. a timed times table test. • Know how to use a spreadsheet to model a real-life situation e.g. budget planner. • Know how to add a formula to a cell in order to create automatic calculations. **Unit 3.7 – Simulations** • Know that a computer simulation can represent real and imaginary situations. • Know advantages and problems of using simulations. • Know how to use a simple simulation to try out different options and test predictions. • Begin to know how to evaluate simulations by comparing them with real simulations and considering their usefulness. **Unit 3.4 – Touch Typing** • Know typing terminology including names of fingers. • Know the home, top and bottom row sections on a keyboard. • Knows the keys typed with left hand. • Knows the keys typed with right hand. • Knows the correct way to sit at a keyboard. **Unit 3.9 – Presenting** • Know what presentation is and how it can be used. • Know how to add pages/slides, text and shapes to pages, and also format them. • Know how to add media such as images, audio and videos. • Know how to use effects and features such as animations and slide transitions. • Know how timings can help when presenting and know how to include them in presentations. • Know how to effectively present to an audience using presentation software. **Unit 4.4 – Writing for Different Audiences** • Know how font size and style can affect the impact of a text. • Know how to use a simulated scenario to produce a news report and campaign using technology. **Unit 4.6 – Animation** • Know how animations are created by hand. • Know how animations are created using computers. • Know what onion skinning is when referring to animation. • Know that animations can be enhanced using features in software such as background and sounds. • Know what 'stop motion' animation is **Unit 4.7 – Effective Searching** • Know how to find information from a search results page. • Know how to search effectively to find out information. • Know how to identify if an information source is true and reliable. **TWO ADDITIONAL OPTIONAL UNITS** Music unit 4.9 (Use of computers to create music) AI unit 4.10 (basic concept of AI; impact on daily life; examples of current use; thinking critically about AI; using AI to create media) optional	**Unit 3.2 – Online Safety** • Knows what makes a safe password and how to keep it safe. • Knows the main outcomes of not keeping passwords safe. • Knows all the common ways the Internet enables people to effectively communicate. • Know that a blog can be used to help communicate with a wider audience. • Know how to contribute to a blog with clear and appropriate messages. • Know that some information held on websites may not be accurate or true. • Beginning to know how to search the Internet and how to think critically about the results returned. • Know why there are age restrictions on digital media and devices. • Know where to turn to for help if they see inappropriate content or have inappropriate contact from others. **Unit 4.2 – Online Safety** • Know that information put online leaves a digital footprint or trail and can expand on prior years' scope of this fact. • Know some of the ways children can protect themselves from online identity theft. • Know that information put online by users could be used for identity theft. • Know the main risks and benefits of installing software and applications. • Know that copying work of others and presenting it as their own is plagiarism. • Knows the consequences of plagiarism. • Knows appropriate behaviour when participating or contributing to collaborative online projects for learning. • Know some of the main positive and negative influences technology has on health and the environment. • Knows the importance of balancing screen time with non-screen time. **Unit 3.5 – Email** • Know the different methods of communication and know the strengths and weaknesses of his form. • Know how to open and responding to email. • Know how to use an address book to write an email. • Know how to use an email environment safely including the importance of the draft feature. • Know how to add attachments to an email. • Know what CC means and how to use it.

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Severn	**Unit 5.1 – Coding** • Begin to know how to simplify code in order to make own programming more efficient. • Know how to create a simple simulation using 2Code. For example, a traffic light sequence. • Know what decomposition and abstraction are in computer science. • Know the need to start coding at a basic level of abstraction to remove superfluous details from own programs. • Know how to use decomposition to make a plan of a real-life situation. • Know what a function is in coding and know how to use a function in own program to make it more efficient. • Know what different variable types are. • Know what strings are and how to use them. • Know how to set and change variable values in code. • Know some of the common ways that text variables can be used in programming. • Know and use concatenation in own programs. **Unit 6.1 – Coding** • Know how to implement a game which includes timers and a score. • Know what the launch command is. • Build on knowledge of functions. • Know how to use multiple functions in own program. • Know how to arrange code in multiple tabs. • Know how to develop creativity when coding to generate novel effects. • Know the different options of generating user input in 2Code. • Know how to attribute variables to user input. • Know the need to code for all possibilities when using user inputs. • Know how 2Code can be used to make a textbased adventure game. • Know with improving understanding of how they can alter existing programs to reflect their own ideas. • Building on existing knowledge of debugging, children know how to debug more effectively. **Unit 6.8 – Binary (ADDITIONAL UNIT)** • Know that all data in a computer is saved in the computer memory in a binary format. • Know that binary uses only the integers 0 and 1. • Know that we can relate 0 as an 'off' switch and 1 to an 'on' switch. • Know how to count up from 0 in binary using visual aids if required. • Know that bits are related to computer storage. • Know how to convert numbers to binary using the division by two method. • Know how to use a converter tool to check binary conversions. **Unit 5.5 – Game Creator** • Know what some of the main elements are that make a successful game. • Know how to plan a playable game. • Know how to incorporate media such as sound and images. • Know how to manipulate media including adding animation. • Know how to successfully evaluate games. **Unit 5.7 – Concept Maps** • Know the need for visual representations when generating and discussing complex ideas. • Know the uses of a 'concept map'. • Know what is meant by 'concept map', 'stage', 'nodes' and 'connections.' • Know how to create a concept map using software such as 2Connect. • Know that concept maps can be used to retell stories and information. • Know how to present a concept map to an audience. **Unit 6.4 – Blogging** • Know the purpose of writing a blog. • Know the features of successful blog writing. • Know how to plan a blog. • Know how to write a blog. • Know how to write a blog post. • Know that the way information is presented within a blog has an impact upon the audience. • Know how to contribute to others' blogs. • Know the importance of having an approval process when creating blog content or modifying it. • Know from Online Safety knowledge that content within blogs applies. For example, children know the issues surrounding inappropriate posts and cyberbullying. **Unit 6.5 – Text Adventures** • Know what a text-based adventure is. • Know how to convert a simple story with 2 or 3 levels of decision making into a logical design. • Know how to use the functionality of 2Create a Story Adventure mode to create, test and debug using plans. • Know the difference between a map-based game and a sequential story-based game. • Know how to use written plans to code a mapbased adventure using 2Code. • Know how to recall existing knowledge to support coding a map-based adventure game. For example, using functions, two-way selection (IF/ELSE statements) and repetition. **Unit 6.6 – Networks** • Know the difference between the World Wide Web and the Internet. • Know what a WAN and LAN is and the key differences between them. • Know how a school network accesses the Internet. • Know the history of the Internet. • Know some of the major changes in technology which have taken place in their lifetime.	**Unit 5.3 – Spreadsheets** • Know how to use formulae within a spreadsheet to convert measurements of length and distance. • Know how to use more advanced formulae effectively. For example, to use formulae to calculate area and perimeter of shapes. • Know how to create formulae that use text variables. • Know how to use tools within a spreadsheet e.g. 2Calculate and the count tool to answer hypotheses. For example, to answer hypotheses about common letters in use. **Unit 6.3 – Spreadsheets** • Know how to create a spreadsheet to help answer a mathematical question relating to probability. • Know how to take 'copy' and 'paste' shortcuts. • Know how to problem solve during mathematical investigations when using spreadsheets by using tools such as the 'Count tool'. • Know how to create a spreadsheet to produce computational models. For example, creating a spreadsheet that works out discounts and final price sales. Children will know how to use advanced formula to assist with this. • Know how to use a spreadsheet to help plan actions. For example, create a spreadsheet to plan how to spend pocket money and the effect of saving. **Unit 6.9 – Spreadsheets (ALTERNTIVE USING INDUSTRY STANDARD EXCEL)** • Know the uses of spreadsheets and familiar with the spreadsheet environment. • Know how to navigate around a spreadsheet using cell references. • Know key vocabulary: Cells, columns, rows, cell names, sheets, workbooks. • Know how to use a spreadsheet to carry out basic calculations including addition, subtraction, multiplication and division formulae. • Know how to use the series fill function. • Know that using formulae allows the data to change and the calculations to update automatically. • Know how to use a spreadsheet to solve a problem. • Know how to use the SUM function. • Know how to manipulate the way data is presented. For example, flash fill, convert text to tables, splitting cells, sorting data. • Know what is meant by a delimiter. • Know how to create formulae that deals with percentages, averages, max and min. • Know what range notation is. • Know that there are ways to present data graphically. • Know how to use charting features to create charts from data in cells. • Know how to use sparklines and data bars to illustrate data. • Know the advantages to using formulae when data is subject to change in a spreadsheet. • Know how to print spreadsheets. **Unit 5.4 – Databases** • Know how to search for information within a database. • Know the different ways to search for information in a database. • Know how to add information into a shared database. • Know how to create own database. • Know how to create new records. • Know what fields are and know how to correctly add information. • Know how to phrase questions so they can be correctly answered using a search of database. **Unit 5.6 – Modelling** • Know what modelling software is and the skills of computer aided design. • Know the effect of moving points when designing. • Know how to design a 3D model to fit certain criteria. • Know how to refine and print a model. **Unit 5.8 – Word Processing** • Know what a word processing tool is for. • Know how to create a word processing document. • Know how to alter the look of text and navigate around a document. • Know how to alter page layout including heading and columns. • Know how to add and edit images. • Know how to add features to enhance look and usability within a document. For example: textboxes, hyperlinks, contents pages. • Know how to use tables to present information. **Unit 6.7 – Quizzing** • Know how to use create activities for younger children using software such as 2DIY. • Know about different question types within quizzing software tools such as 2Quiz. • Know how to give and respond to feedback based on quizzes made. • Know how to create their own grammar games. • Know how to use multiple pieces of software to enhance a quiz. For example, creating a quiz that requires children to look up information on a database.	**Unit 5.2 – Online Safety** • Know in more detail from prior learning of the impact that sharing digital content can have. • Know how to think critically about information they share online. • Know responsibilities they have for themselves and others regarding online behaviour. • Know and have developed knowledge from prior years about maintaining secure passwords. • Know about image manipulation using software and the advantages or disadvantages of this when shared online. • Know what is meant by appropriate and inappropriate text, photographs and videos. • Know about the impact of sharing media such as photographs and videos online. • Know about the importance of citing content online from others and know how to do this. • Know how to select keywords and search techniques to find relevant information to increase reliability. **Unit 6.2 – Online Safety** • Know the benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. • Know what secure sites are. • Know that secure sites will have industry standard seals of approval. • Build on knowledge of Digital Footprints. For example, know how and why people use their information. • Build on knowledge of appropriate online behaviours and how this can protect themselves and others from possible online dangers. For example, the dangers of promoting inappropriate content online. • Have greater knowledge of how to make more informed choices of how free time is used. • Know the effects on individual health when having too much screen time.